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10/761,507	01/21/2004	Rongguang Liang	87093NAB	4088

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EXAMINER	
BLACKMAN, ROCHELLE ANN J	

ART UNIT	PAPER NUMBER
2851	

DATE MAILED: 06/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/761,507	LIANG, RONGGUANG	
	Examin r	Art Unit	
	Rochelle Blackman	2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *1/21/04* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1/21/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-8, 10-14, and 16-20 rejected under 35 U.S.C. 102(b) as being anticipated by Mead, U.S. Patent No. 5,555,035.

Regarding claims 1-8, Mead discloses a "projection apparatus for forming a tiled image on a display surface, said tiled image comprising at least a first image tile segment and an adjacent second image tile segment"(see Figs. 1-6), the projection apparatus comprising: "(a) an illumination system providing a first illumination beam having a first polarization state and a second illumination beam having a second polarization state, said first and second illumination beams being substantially non-overlapping; wherein said illumination system comprises a light source selected from the group consisting of a lamp and an LED"(see 18 and 25 of FIGS. 1, 2, 5, and 6); "(b) a first spatial light modulator for forming a first modulated light beam from said first illumination beam; (c) a second spatial light modulator for forming a second modulated light beam from said second illumination beam; wherein said first spatial light modulator is a transmissive LCD; wherein said first spatial light modulator is a reflective LCD"(see

12 of FIGS. 1-6); "(d) a beam aligner for directing said first and second modulated light beams along adjacent parallel paths, in the direction of the optical axis of a projection lens; and said projection lens directing said first modulated beam to said display surface to form the first tile segment and directing said second modulated beam to said display surface to form the second tile segment; wherein said beam aligner comprises a polarization beamsplitter"(for "beam aligner" see 20 of FIG. 2 and for "projection lens", see 19 of FIGS. 1, 2, 5, and 6); an "analyzer in the path of said first modulated beam"(see 22 of FIG. 5 and 6); "wherein said illumination system comprises a polarization beamsplitter"(see 17 of FIGS. 1, 2, 5, and 6); "wherein said illumination system sequentially provides light having a first color, followed by light having a second color, followed by light having a third color"(see PROJECTION ILLUMINATION LIGHT(CONTINUOUS OR SEQUENTIAL) in FIGS. 1 and 2 and see 19 of FIGS. 5 and 6).

Regarding claims 10-14, Mead discloses a "projection apparatus for forming an image on a display surface as a plurality of adjacent image tile segments"(see FIGS. 1-6), the projection apparatus comprising: "(a) for each image tile segment, a corresponding spatial light modulator for modulating incident illumination to form a modulated light beam; wherein at least one said spatial light modulator is a transmissive LCD; wherein at least one said spatial light modulator is a reflective LCD"(see 12 of FIGS. 1-6); "(b) a beam aligner for directing each said modulated light beam along a path parallel to the optical axis of a projection lens, wherein separate said paths are substantially non-overlapping; and (c) said projection lens projecting each said modulated light beam onto the display surface, forming each image tile segment

thereby; wherein said beam aligner comprises a polarization beamsplitter"(for "beam aligner" see 20 of FIG. 2 and for "projection lens", see 19 of FIGS. 1, 2, 5, and 6); "at least one analyzer in the path of at least one said modulated beam"(see 22 of FIG. 5 and 6).

Regarding claim 16, Mead discloses a "projection apparatus for forming a tiled image on a display surface, said tiled image comprising at least four contiguous image tile segments"(see FIGS. 1-6), the projection apparatus comprising: "(a) an illumination system providing a first illumination beam having a first polarization state and a second illumination beam having a second polarization state, said first and second illumination beams being substantially non-overlapping"(see 18 and 25 of FIGS. 1, 2, 5, and 6); "(b) a first spatial light modulator for forming a first modulated light beam from said first illumination beam; (c) a second spatial light modulator for forming a second modulated light beam from said first illumination beam; (d) a third spatial light modulator for forming a third modulated light beam from said second illumination beam; (e) a fourth spatial light modulator for forming a fourth modulated light beam from said second illumination beam"(see 12 of FIGS. 1-6); a "beam aligner for directing said first, second, third, and fourth modulated light beams along adjacent parallel paths, in the direction of the optical axis of a projection lens; and (g) said projection lens directing each said modulated beam to the display surface to form each of said at least four contiguous image tile segments"(for "beam aligner" see 20 of FIG. 2 and for "projection lens", see 19 of FIGS. 1, 2, 5, and 6).

Regarding claims 17-20, Mead discloses a "method for forming a tiled image on a display surface, said tiled image comprising at least a first image tile segment and an adjacent second image tile segment"(see function of elements in FIGS. 1-6), the method comprising: "(a) providing a first illumination beam having a first polarization state and a second illumination beam having the orthogonal polarization state"(see function of 25 in FIGS. 5 and 6); "(b) forming a first modulated light beam from said first illumination beam; (c) forming a second modulated light beam from said second illumination beam; wherein the step of forming said first modulated light beam comprises the step of directing said first illumination beam to a reflective spatial light modulator; wherein the step of forming said first modulated light beam comprises the step of directing said first illumination beam to a transmissive spatial light modulator"(see function of 12 in FIGS. 1-6); "(d) aligning said first and second modulated light beams along separate, adjacent parallel paths, in the direction of the optical axis of a projection lens"(see function of 20 in Fig. 2 and for "projection lens", see 19 of FIGS. 1, 2, 5, and 6); and "(e) projecting at least said first modulated beam to said display surface to form the first tile segment and said second modulated beam to said display surface to form the adjacent second tile segment"(see function of "projection lens" in FIGS. 1, 2, 5, and 6); "wherein the step of providing said first illumination beam comprises the step of providing a beam having a repeating sequence of different colors"(see PROJECTION ILLUMINATION LIGHT(CONTINUOUS OR SEQUENTIAL) in FIGS. 1 and 2 and see 19 of FIGS. 5 and 6).

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 6-13, and 15-20 are rejected under 35 U.S.C. 102(b) as being anticipated by O'Connor et al., U.S. Patent No. 2002/0191235.

Regarding claims 1-4 and 6-9, O'Connor discloses a "projection apparatus for forming a tiled image on a display surface, said tiled image comprising at least a first image tile segment and an adjacent second image tile segment"(see Figs. 2-12), the projection apparatus comprising: "(a) an illumination system providing a first illumination beam having a first polarization state and a second illumination beam having a second polarization state, said first and second illumination beams being substantially non-overlapping; wherein said illumination system comprises a light source selected from the group consisting of a lamp and an LED"(see Light Source, Lr, Ls, and Lp of Fig. 2); "(b) a first spatial light modulator for forming a first modulated light beam from said first illumination beam; wherein said first spatial light modulator is a transmissive LCD; wherein said first spatial light modulator is a reflective LCD"(see 34 or 50 of Fig. 2); "(c) a second spatial light modulator for forming a second modulated light beam from said second illumination beam"(see 36 or 52 of Fig. 2); "(d) a beam aligner for directing said first and second modulated light beams along adjacent parallel paths, in the direction of the optical axis of a projection lens; said projection lens directing said first modulated beam to said display surface to form the first tile segment and directing said second

modulated beam to said display surface to form the second tile segment; wherein said beam aligner comprises a polarization beamsplitter"(for "beam aligner", see 12, 13 and for "projection lens" see 16 of Fig. 2); "wherein said illumination system comprises a polarization beamsplitter"(see 32 and 48 of Fig. 2) "wherein said illumination system sequentially provides light having a first color, followed by light having a second color, followed by light having a third color"(see 20 and 22 of Fig. 2); a "half-wave plate in the path of said first modulated beam"(see 33, 35 and 49, 51 of Fig. 2).

Regarding claims 10-13 and 15, O'Connor discloses a "projection apparatus for forming an image on a display surface as a plurality of adjacent image tile segments"(see Figs. 2-12) the projection apparatus comprising: "(a) for each image tile segment, a corresponding spatial light modulator for modulating incident illumination to form a modulated light beam; wherein at least one said spatial light modulator is a transmissive LCD; wherein at least one said spatial light modulator is a reflective LCD"(see 34, 36, 50, and 52 of Fig. 2); "(b) a beam aligner for directing each said modulated light beam along a path parallel to the optical axis of a projection lens, wherein separate said paths are substantially non-overlapping; (c) said projection lens projecting each said modulated light beam onto the display surface, forming each image tile segment thereby; wherein said beam aligner comprises a polarization beamsplitter"(for "beam aligner", see 12, 13 and for "projection lens" see 16 of Fig. 2); "at least one half-wave plate in the path of at least one said modulated beam"(see 33, 35 and 49, 51 of Fig. 2).

Regarding claim 16, O'Connor discloses a "projection apparatus for forming a tiled image on a display surface, said tiled image comprising at least four contiguous image tile segments"(see Figs. 2-12), the projection apparatus comprising: "(a) an illumination system providing a first illumination beam having a first polarization state and a second illumination beam having a second polarization state, said first and second illumination beams being substantially non-overlapping"(see Light Source, Lr, Ls, and Lp of Fig. 2); "(b) a first spatial light modulator for forming a first modulated light beam from said first illumination beam"(see 34 of Fig. 2); "(c) a second spatial light modulator for forming a second modulated light beam from said first illumination beam"(see 36 of Fig. 2); "(d) a third spatial light modulator for forming a third modulated light beam from said second illumination beam"(see 50 of Fig. 2); "(e) a fourth spatial light modulator for forming a fourth modulated light beam from said second illumination beam; (see 52 of Fig. 2); a "beam aligner for directing said first, second, third, and fourth modulated light beams along adjacent parallel paths, in the direction of the optical axis of a projection lens; (g) said projection lens directing each said modulated beam to the display surface to form each of said at least four contiguous image tile segments"(for "beam aligner", see 12, 13 and for "projection lens" see 16 of Fig. 2).

Regarding claims 17-20, O'Connor discloses a "method for forming a tiled image on a display surface, said tiled image comprising at least a first image tile segment and an adjacent second image tile segment"(see function of elements in Figs. 2-12), the method comprising: "(a) providing a first illumination beam having a first polarization state and a second illumination beam having the orthogonal polarization state; wherein

the step of providing said first illumination beam comprises the step of providing a beam having a repeating sequence of different colors"(see function of Light Source, Lr, Ls, and Lp in Fig. 2); "(b) forming a first modulated light beam from said first illumination beam; wherein the step of forming said first modulated light beam comprises the step of directing said first illumination beam to a reflective spatial light modulator; wherein the step of forming said first modulated light beam comprises the step of directing said first illumination beam to a transmissive spatial light modulator"(see function of 34 or 36 of in Fig. 2); "(c) forming a second modulated light beam from said second illumination beam"(see function of 50 or 52 in Fig. 2); "(d) aligning said first and second modulated light beams along separate, adjacent parallel paths, in the direction of the optical axis of a projection lens"(see function of 12, 13 in Fig. 2 and for "projection lens" see 16 of Fig. 2); and "(e) projecting at least said first modulated beam to said display surface to form the first tile segment and said second modulated beam to said display surface to form the adjacent second tile segment"(see function of "projection lens" in Fig. 2).

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-4, 6-8, 10-13, and 16-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Gibbon, U.S. Patent No. 2003/0063226.

Regarding claims 1-4 and 6-8, Gibbon discloses a "projection apparatus for forming a tiled image on a display surface"(see 1-5), said tiled image comprising "at least a first image tile segment and an adjacent second image tile segment"(see FIGS. 1A-D), the projection apparatus comprising: "(a) an illumination system providing a first illumination beam having a first polarization state and a second illumination beam having a second polarization state, said first and second illumination beams being substantially non-overlapping"(see light along dotted or broken line representing optical axes in FIG. 2 and see 22 of FIG. 3); "(b) a first spatial light modulator for forming a first modulated light beam from said first illumination beam; wherein said first spatial light modulator is a transmissive LCD"(see 1a or 2a of FIG. 2); (c) a "second spatial light modulator for forming a second modulated light beam from said second illumination beam"(see 1b or 2b of FIG. 2); "(d) a beam aligner for directing said first and second modulated light beams along adjacent parallel paths, in the direction of the optical axis of a projection lens; wherein said beam aligner comprises a polarization beamsplitter"(see 7 of FIG. 2); and "said projection lens directing said first modulated beam to said display surface to form the first tile segment and directing said second modulated beam to said display surface to form the second tile segment"(see 13 of FIG. 2); "wherein said illumination system comprises a polarization beamsplitter"(see 6 and 8 of FIG. 2); "wherein said illumination system comprises a light source selected from the group consisting of a lamp and an LED; "(see 21 of FIG. 1); "wherein said illumination

system sequentially provides light having a first color, followed by light having a second color, followed by light having a third color"(see 6 and 8 of FIG. 2);

Regarding claims 10-13, Gibbon discloses a "projection apparatus for forming an image on a display surface as a plurality of adjacent image tile segments"(see FIGS 1-5), the projection apparatus comprising: "(a) for each image tile segment, a corresponding spatial light modulator for modulating incident illumination to form a modulated light beam; wherein at least one said spatial light modulator is a transmissive LCD; wherein at least one said spatial light modulator is a reflective LCD"(see 1a, 1b, 2a, and 2b of FIG. 2); "(b) a beam aligner for directing each said modulated light beam along a path parallel to the optical axis of a projection lens, wherein separate said paths are substantially non-overlapping; wherein said beam aligner comprises a polarization beamsplitter"(see 7 of FIG. 2); and "(c) said projection lens projecting each said modulated light beam onto the display surface, forming each image tile segment thereby"(see 13 of FIG. 2).

Regarding claim 16, Gibbon discloses a "projection apparatus for forming a tiled image on a display surface, said tiled image comprising at least four contiguous image tile segments"(see FIGS. 1-5), the projection apparatus comprising: "(a) an illumination system providing a first illumination beam having a first polarization state and a second illumination beam having a second polarization state, said first and second illumination beams being substantially non-overlapping"(see light along dotted or broken line representing optical axes in FIG. 2 and see 22 of FIG. 3); "(b) a first spatial light modulator for forming a first modulated light beam from said first illumination beam"(see

1a of FIG. 2); "(c) a second spatial light modulator for forming a second modulated light beam from said first illumination beam"(see 1b of FIG. 2); "(d) a third spatial light modulator for forming a third modulated light beam from said second illumination beam"(see 2a of FIG. 2); "(e) a fourth spatial light modulator for forming a fourth modulated light beam from said second illumination beam"(see 2b of FIG. 2); a "beam aligner for directing said first, second, third, and fourth modulated light beams along adjacent parallel paths, in the direction of the optical axis of a projection lens"(for "beam aligner", see 7 and for "projection lens", see 13 of FIG. 2); "said projection lens directing each said modulated beam to the display surface to form each of said at least four contiguous image tile segments"(see FIGS. 1A-D).

Regarding claims 17-20, Gibbon discloses a "method for forming a tiled image on a display surface, said tiled image comprising at least a first image tile segment and an adjacent second image tile segment"(see function of elements in FIGS. 1-5), the method comprising: "(a) providing a first illumination beam having a first polarization state and a second illumination beam having the orthogonal polarization state"(see light along dotted or broken line representing optical axes in FIG. 2 and see 22 of FIG. 3); "(b) forming a first modulated light beam from said first illumination beam; (c) forming a second modulated light beam from said second illumination beam"(see light along dotted or broken line representing optical axes in FIG. 2); "(d) aligning said first and second modulated light beams along separate, adjacent parallel paths, in the direction of the optical axis of a projection lens"(see function of 7 in FIG. 2); and "(e) projecting at least said first modulated beam to said display surface to form the first tile segment and

said second modulated beam to said display surface to form the adjacent second tile segment"(see function of 13 in FIG. 2); "wherein the step of forming said first modulated light beam comprises the step of directing said first illumination beam to a reflective spatial light modulator; wherein the step of forming said first modulated light beam comprises the step of directing said first illumination beam to a transmissive spatial light modulator; wherein the step of providing said first illumination beam comprises the step of providing a beam having a repeating sequence of different colors"(see function of 6 and 8 in FIG. 2).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rochelle Blackman whose telephone number is (571) 272-2113. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on (571) 272-2180. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RB

Alan A. Mathews
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